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Targets Management Office

Low Cost Target Mover (LCTM)

43rd Annual Targets, UAVs and Range Operations Symposium

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PM-ITTS

2 November

Outline

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- Need
- History
- Description
  - Target Façade
  - Host Chassis
- Target/Host Chassis Integration
- Control System Components/Rqmts
- Schedule
- Questions/Comments

Need

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TMO Identified A Need For A Movable Target System That Was:

- Affordable
- Adaptable (Host a Variety of Facades)
- Maneuverable (Change Directions
- Durable (Survive Multiple Hits)

The LCTM Program Was Initiated as a Targets Management Initiative To Fill This Need

History

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Original Concept - Oct 2004: Remote controlled vehicle capable of transporting a 2 ½-dimensional target

Jan/Feb 2005: Remote controlled vehicle capable of transporting a full-scale T-72 target (Based on User Requirements)

June 2005: ***Common*** Ground Target Control system to be developed and integrated by the US Navy

(Using Army Software Packages: TVARCS & TTCS-U as Baselines)

Description

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The LCTM Contains 3 Main Components:

1) Full-scale Surrogate Target
2) Host Chassis
3) Control System

Description: *Target Facade*

Full Scale Surrogate Targets

Proof-of-Concept Surrogate Facade

T-72 Main Battle Tank

- Full-scale T-72 Target (W=11.05ft, L= 22.8ft)
- Weight = 1700lbs
- 19 pieces of vacuum formed 5/32” ABS plastic + wooden substructure

Other Available Targets

ZSU-23-4

2S-6 Tunguska

Description: *Host Chassis*

Chassis Selection

SPECIFICATIONS:

- 2005 F350 137” Wheel base, Regular Cab
- Four Wheel Drive
- Automatic Transmission
- Gasoline Engine

Why F350 ?

- Payload Capacity
- Wheel Base

Host Chassis Modifications

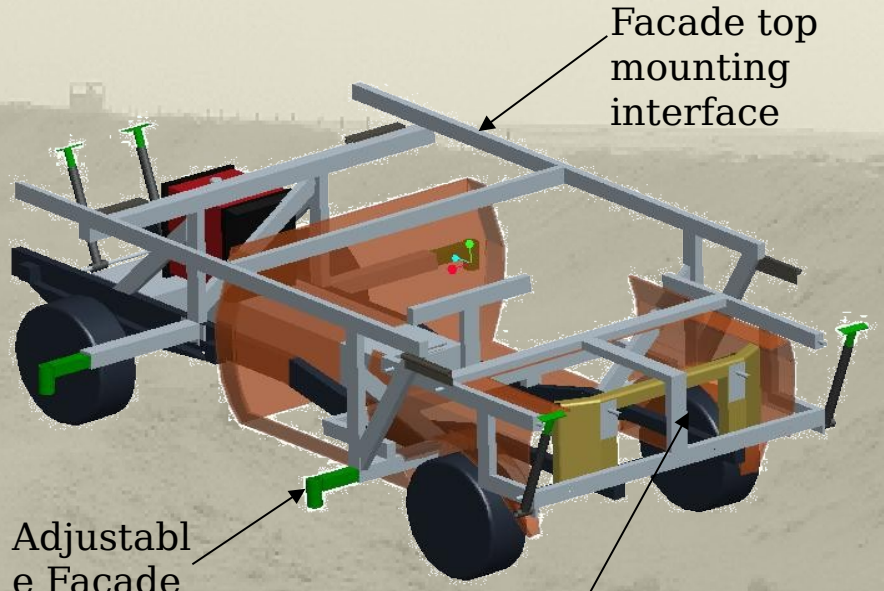
- Hardware removed from F350
  - Front and rear bumpers
  - Truck bed
  - Doors
  - Glass
  - Seats
  - Plus, cut off top of truck cab

Description: *Host Chassis*

Host Chassis Modifications

Hardware fabrication to F350:

- Add mounting interfaces for façade
- Add adjustable Façade side supports for different target widths
- Add armor for differential cover, engine compartment, and gas tank

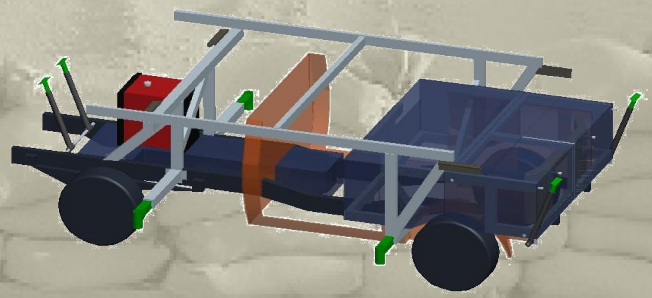


Description: *Host Chassis*

- Armor
  - AR 400 3/16” plated
  - Gas Tank
  - Differential Cover
  - Engine compartment 5 sides excluding bottom
  - Estimated Armor Weight = 1600 lbs
  - Prototype will have armor. (Armor will be an option for follow-on vehicles.)
- Tires
  - Solid or Tyrfil (foam filled) tires

AR400 plate needed on rear differential cover

Fuel Tank



Description: *Host Chassis*

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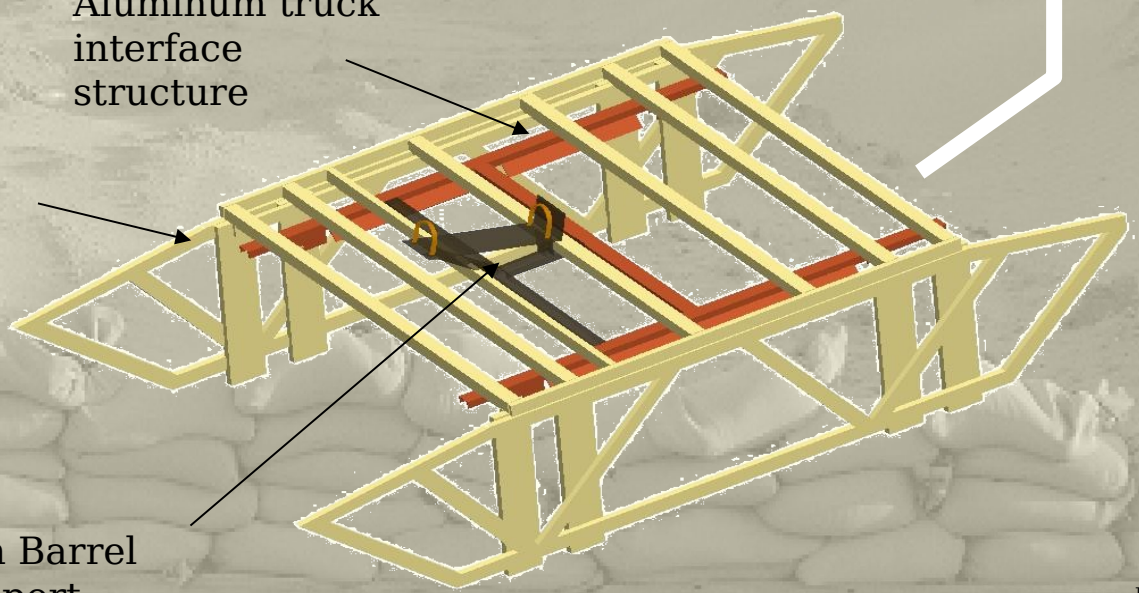
Facade Reinforcement

Additional Aluminum framework added to facade

- Supports wood facade structure
- Provides mounting interface to truck platform
- Provides mounting support for gun barrel



Target/Host Chassis Integration

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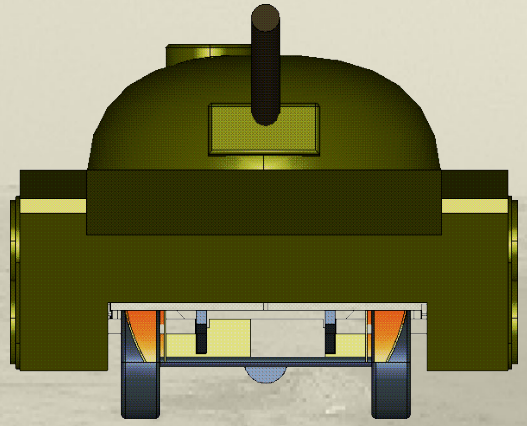
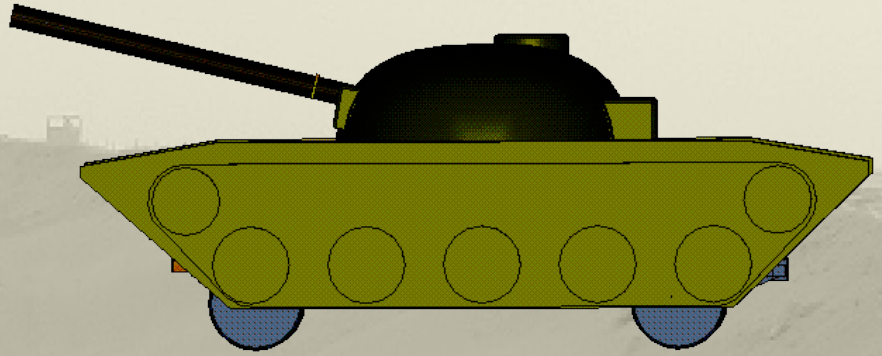
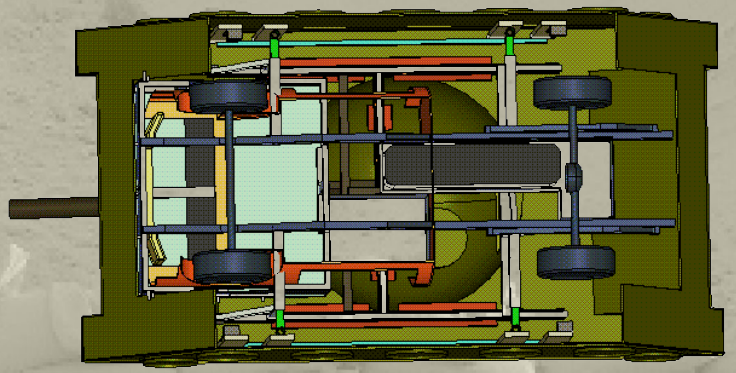
T-72 Main Battle Tank Integration





Truck protrudes beyond the fore and aft end of facade by less than 2 inches.



Control System Components

The LCTM Control System will leverage off of the existing US Army Target Control Systems capabilities:

<u>TTCS-U:</u> UHF is control	The Target Tracking and Control System – the US Army standard aerial vehicle target system.
<u>TVARCS:</u> System Anti-Tank	The Target Vehicle Array Remote Control was developed for the US Army Brilliant (BAT) Weapon System. It successfully controlled 32 armored vehicles in column formation.

Control System Requirements

Target Vehicle: capability	Wheeled vehicle with 4WD
Target Speed: line.	Maximum speed is 35 mph straight Maneuvers at reduced speed.
Maneuvers: Turns. dependent on	Forward, Reverse, Left & Right Turning radius and speed surrogate target stability.
Number of Vehicles: operations	Single Vehicle, Multiple Vehicles (independent routes), Convoy

Schedule

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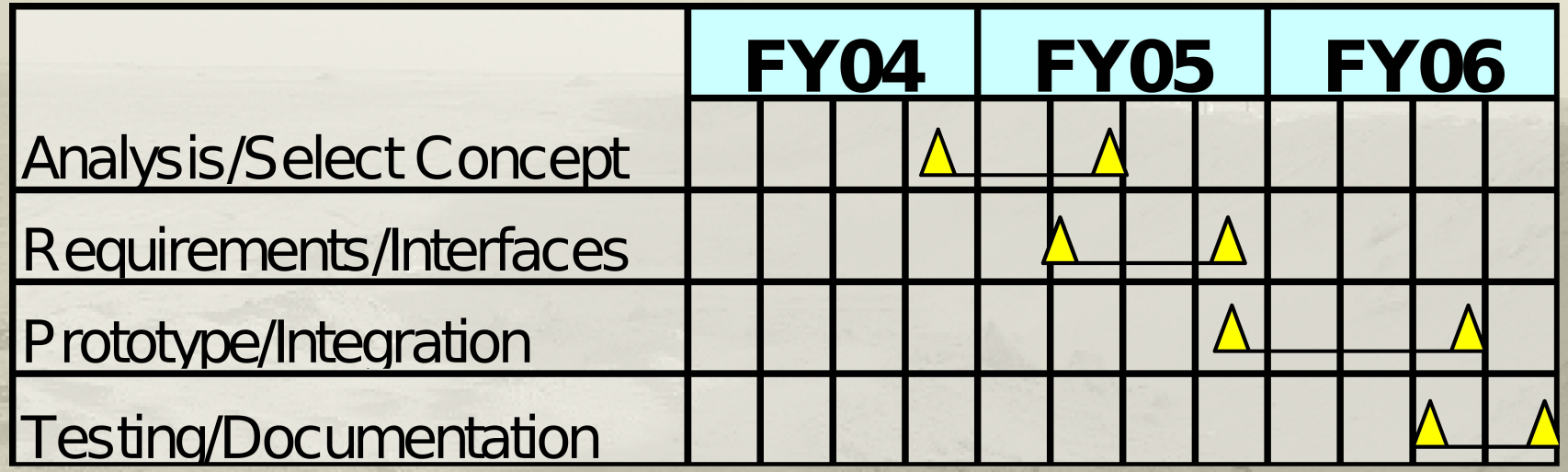
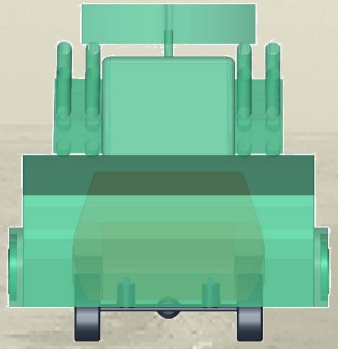
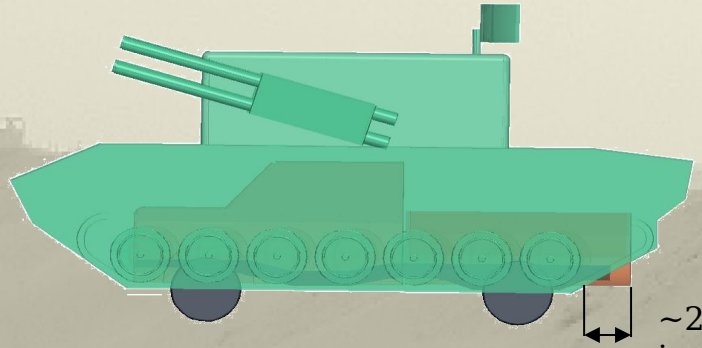


Open Forum Discussions on Low Cost Target Mover

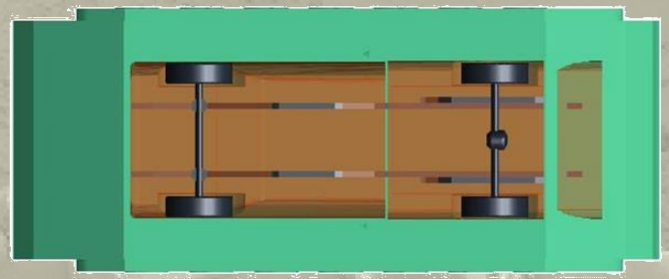
Backup Charts

2S-6 Tunguska Air Defense System

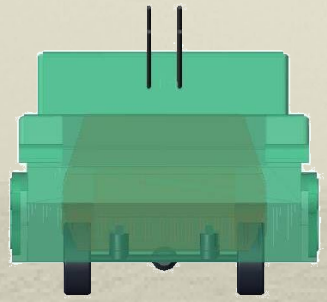


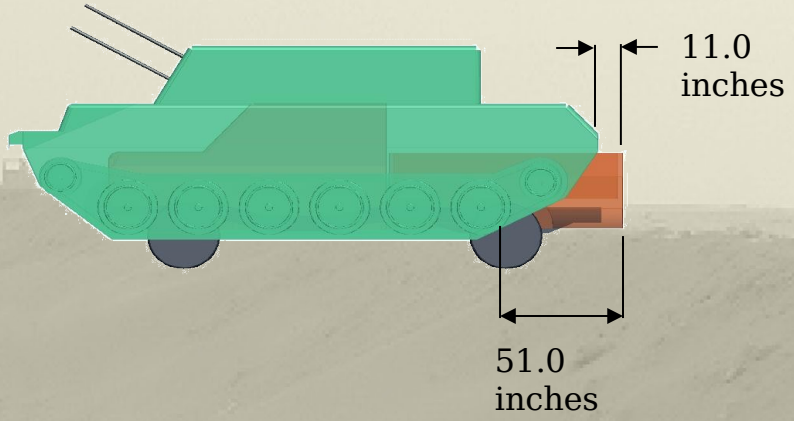


- Truck protrudes beyond aft end of facade by approximately 20 inches
- Should be able to reduce protrusion to approximately 10 inches by removing rear bumper and bed

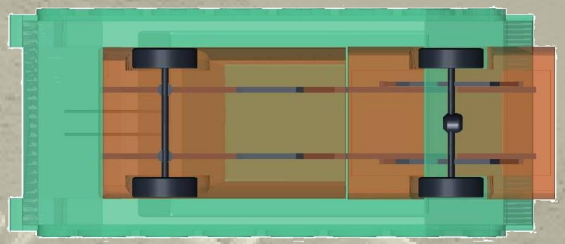


ZSU-23-4
Self Propelled Anti-Aircraft Gun





- Truck protrudes beyond aft end of facade by approximately 51 inches at bottom and 11 inches at the top
- Should be able to reduce protrusion to approximately 10 inches by removing rear bumper and bed



Weight Analysis for T-72

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- Ford F350 Payload Capacity 4200 lbs
- Estimated T72 facade and support structure -1700 lbs
- Estimated optional armor weight -1600 lbs
- Control system - 200 lbs
- Removing truck bed, bumpers, doors etc +400 lbs

1100 lbs Estimated Capacity

- Remaining capacity can be used for:
  - Generators
  - Air compressors
  - Motorized antenna mounts